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ABSTRACT

To determine whether gender differences exist in paralinguistic perception, 31 male and 59 female college students listened to an audiotape on which emotions were conveyed through ambiguous verbal statements and then indicated their perceptions of the conveyed emotions. Statistical analyses of the student responses in relation to students' individual characteristics showed that (1) women's perception scores were significantly higher (more accurate) than men's scores; (2) students majoring in speech had higher scores than nonmajors, but the difference was not statistically significant; (3) women majoring in speech had higher scores than men majoring in speech, but the difference was not statistically significant; (4) women majoring in speech had significantly higher scores than women who were nonmajors; (5) female nonmajors had significantly higher scores than male nonmajors; (6) scores of the men majoring in speech were higher than those of men not majoring in speech, but the difference was not statistically significant; and (7) men majoring in speech had higher scores than female nonmajors, but the difference was not statistically significant. Previous coursework in oral interpretation, previous experience in oral interpretation activities, grade level, and age level were not factors differentiating students' scores on the intonation test. Overall, the study indicated that men entering collegiate-level oral interpretation classes may need increased initial instruction in intonation discrimination. (RL)

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Sex Differences in the Accuracy of Intonation Perception: A Study of Oral Interpretation Students

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Numerous studies indicate the probability of sex differences in paralinguistic perception. Dusenbury and Knower, in studying emotions conveyed through recorded readings of the alphabet, concluded "women . . . appear to be better judges than men of meaning communicated in the voice," although the differences were not found significant.[1] Pfaff, testing the perception of emotions conveyed through recorded readings of numerals, found: "For the college students, women were very significantly superior to men."[2] Dimitrovsky, using a verbal paragraph recited with various intonations, found that "girls are more accurate than boys in identifying expressions of feeling" in the age group six through twelve.[3] Burgoon and Saine, in their survey of information about vocalic cues state: ". . . in both sending and interpreting emotional [facial] expressions, females are slightly superior to males. This holds true for communicating and judging vocalic expressions as well."[4] La France and Mayo, citing research by Rosenthal and others, reported that women are better than men at identifying emotional situations through visual and vocal cues, as measured by the Profile of Nonverbal Sensitivity (the PONS test).[5]

In a recent survey of brain research, Restak contends that "boys think differently from girls" as a result of sex differences in brain organization and specialization. He cites evidence that infant girls are more sensitive to the sound of the mother's voice than infant boys, that female babies are more oriented toward tones of voice than male babies, and that this "enhanced hearing performance persists throughout life." Citing research by Wolff and Horowitz

in which boys and girls were asked to follow the rhythm of a metronome, Restak concludes that girls are more able than boys to recognize and follow the sequencing of sounds. Because females are "better equipped in the auditory mode," Restak believes "they can pick up significant information from tones of voice and intensity of expression."[6]

In addition to these studies which have reached conclusions about sex differences, it should also be noted that other studies into vocalic communication, e.g., research by Scherer, Koivumaki, and Rosenthal, contain an assumption that sex is a variable, since testing was carefully confined to one sex.[7]

In spite of the persistent evidence and assumptions cited above, not all paralinguistic researchers agree. Levy--in a study of vocal expression of emotion, identification of emotions vocalized by others, and identification of emotions vocalized by oneself (using tapes replayed after a lapse of time)--found no significant differences between the sexes in any of the three abilities.[8]

While Levy's results are in contrast to the other research reported above, her conclusions nonetheless coincide with most instructional practices. The existing evidence of sex differences in paralinguistic perception has not been influential enough to stimulate development of different teaching methods based on sex. Analysis of the conflicting theories and application of the strongest conclusions is particularly important for teachers of oral interpretation; for they have an opportunity and responsibility to address gender differences in paralinguistic perception, if such differences exist.

Method

The authors conducted a study of the intonation perceptiveness of male and female students entering collegiate-level oral interpretation classes. The study consisted of developing and administering a measuring instrument. An audio-tape was created in which ten emotions were conveyed through ambiguous verbal statements. As noted by Leathers, the use of ambiguous verbal content has precedent as a paralinguistic research method, and was chosen for this study as a more realistic encoding/decoding experience than filtered speech, foreign language statements, or language substitutes.[9] The tape was constructed in two stages. First, eight advanced oral interpretation students each recorded ten statements after being coached to convey specified kinds and intensities of emotions. Secondly, three experts (two faculty members and a graduate student with extensive backgrounds in oral interpretation) listened to the eight tapes and marked the emotions they perceived on a form which provided five alternatives per statement. The experts (two men and a woman) were not informed that each reader was trying to convey the same emotion for each particular statement. Of the five alternatives presented to the experts for each statement, one exactly described the intended emotion (e.g., "anger"); another was a foil--the same kind of emotion, but weaker or stronger in intensity (e.g., "irritation"); the other three alternatives described distinctly different emotions.

When the responses of the experts were tabulated, it was determined for each statement which of the eight readers was most successful in conveying to both male and female experts the assigned kind and intensity of emotion. The ten most accurate readings were then excerpted from the eighty on the tapes. A new tape was made from these segments, with a ten-second pause between each segment. This new tape contained four statements read by men and six

statements read by women. No single reader's voice occurred consecutively. This tape and the same response form used by the experts became the measuring instrument (test) used in this study.

The test was administered at the beginning of the semester in five introductory collegiate oral interpretation classes. The subjects were also asked to complete questionnaires indicating sex, age, academic major, classification, previous coursework in oral interpretation, and previous cocurricular experience in oral interpretation. This information was gathered and analyzed in order to compare gender with other possible variables.

Analysis was based on 90 subjects (31 men and 59 women) for whom all information was complete (all ten responses marked and all information provided on the questionnaire). Statistical analysis of the data included both analysis of variance and t-test.

Results

1. Women scored higher than men. The findings were statistically significant ($t=2.11$, $df=75$, $P<.05$).

2. Students majoring in speech scored higher than non-majors, but the difference was not statistically significant ($t=1.91$, $df=88$, $P>.05$).

3. Women majoring in speech scored higher than men majoring in speech, but the difference was not statistically significant ($t=1.70$, $df=20$, $P>.05$). Theatre is included within the speech program at the campus where this study was conducted. Thus, these results are similar to findings cited by La France and Mayo that "some men score equal to the average woman [on the PONS test]; often these are men working in theatre and the arts where training and selection for sensitivity to nonverbal expression play an important part."[10]

4. Women majoring in speech scored higher than women who were non-majors. The difference was statistically significant ($t=2.42$, $df=32$, $P<.05$).

5. Women non-majors scored higher than men non-majors. The difference was statistically significant ($t=2.01$, $df=57$, $P<.05$).

6. Men majoring in speech scored higher than men who were non-majors, but the difference was not statistically significant ($t=1.49$, $df=29$, $P>.05$).

7. Men majoring in speech scored higher than women non-majors, but the difference was not statistically significant ($t=0.01$, $df=55$, $P>.05$).

8. Analysis revealed no difference in scores between students having previously experienced a unit or course in oral interpretation at the high school or college level, and students having no prior classroom experience.

9. Analysis revealed no difference in scores between students who had previously participated in cocurricular oral interpretation activities and students having no cocurricular experience.

10. Analysis revealed no difference in scores between underclassmen (freshmen and sophomores) and upperclassmen (juniors, seniors, and graduate students).

11. Analysis revealed no difference in scores between students aged under 20 and those aged 20 and over.

Discussion

This study indicates that men entering collegiate-level oral interpretation classes may need increased initial instruction in intonation discrimination. If men are less able to detect subtle differences in emotional meaning as conveyed through the voice, they are at an initial disadvantage in appreciating and criticizing interpretive readings. This limited perception

may also make it difficult for men to incorporate expressive voice variations into their own performances. The only men, in this and most other studies, to equal the intonation perception abilities of women are those with an academic background or special training in speech/theatre; this affirms both the need and benefits of intensive training. Special training based on sex is consistent with Restak's analysis. While asserting that men and women think differently, he does not believe either sex to be intellectually superior. Rather, he believes educators should recognize the respective perceptual abilities which need special attention in order to develop.[11] While a physics teacher may need to provide special training in visual perception for women, an oral interpretation teacher may need to provide special training in voice perception for men.

That a concerted focus is needed in order to improve an underdeveloped skill is suggested by the eighth result listed above. The limited time available in high school interpretation units and occasional courses, and the emphasis on performance at the secondary level, may account for the lack of measurable improvement in paralinguistic perception among males. It also appears that limited college instruction in oral interpretation without special attention to intonation perception training for men does not in itself overcome the deficiency.

Among the special collegiate-level teaching methods which might be developed for male interpreters are role-playing activities in which men, as participants and observers, gain experience in identifying and responding accurately to vocal nuances in otherwise ambiguous situations. Men might also be guided to study and listen to literature in which the ambiguity of written content can only be clarified through intonation cues. Measuring instruments,

such as those used in this and other studies, could be further refined and used as a means of gauging student progress. To overcome their initial disadvantage, this special perception training for men should logically precede graded performances and theoretical discussions.

At present, methodology is sometimes altered to meet the special needs of adult education classes, or to reflect different expectations from underclassmen and upperclassmen. While these adaptations may have merit in an oral interpretation classroom, this study did not find that age or academic level are factors in accuracy of intonation perception. In the development of this particular ability, a new distinction in methodology may be needed--a distinction based on sex.

Further research should follow the development of new teaching methodology. Among the approaches could be separation of oral interpretation classes into control and experimental groups, with the latter classes including special methods for male students. Pre-tests could then be used to further verify the results of this study, and post-tests could be used to measure the success of the new methodology. If special teaching methods can be shown to increase the intonation perceptiveness of male college students, the academic value of oral interpretation courses will be further increased and the population served by such courses will be widened. For these courses, in addition to serving their important humanizing and liberalizing objectives for men and women, would address a specific communication deficiency that affects men in both their personal and professional lives.

Footnotes

[1] Delwin Dusenbury and Franklin H. Knower, "Experimental Studies of the Symbolism of Action and Voice--II," The Quarterly Journal of Speech, 25, No. 1 (February 1939), pp. 69-70.

[2] Paul L. Pfaff, "An Experimental Study of the Communication of Feeling Without Contextual Material," Speech Monographs, 21, No. 2 (June 1954), p. 156.

[3] Lilly Dimitrovsky, "The Ability to Identify the Emotional Meaning of Vocal Expressions at Successive Age Levels," in The Communication of Emotional Meaning, ed. Joel Davitz (New York: McGraw-Hill, 1964), p. 83.

[4] Judee K. Burgoon and Thomas Saine, The Unspoken Dialogue (Boston: Houghton Mifflin, 1978), p. 209.

[5] Marianne La France and Clara Mayo, "A Review of Nonverbal Behaviors of Women and Men," Western Journal of Speech Communication, 43, No. 2 (Spring 1979) p. 99.

[6] Richard Restak, "Why Little Boys Roughhouse While Girls Are More Dextrous and Fluent in Speech," Des Moines Sunday Register, 8 July 1979, Sec. C, p. 3, cols. 1-6. Richard M. Restak, The Brain: The Last Frontier (Garden City, New York: Doubleday, 1979), pp. 198-99.

[7] Klaus R. Scherer, Judy Koivumaki, and Robert Rosenthal, "Minimal Cues in the Vocal Communication of Affect: Judging Emotions from Content-Masked Speech," Journal of Psycholinguistic Research, 1, No. 3 (1972), p. 271.

[8] Phyllis Kempner Levy, "The Ability to Express and Perceive Vocal Communications of Feeling," in The Communication of Emotional Meaning, ed. Joel R. Davitz (New York: McGraw-Hill, 1964), p. 50.

[9] Dale G. Leathers, Nonverbal Communication Systems (Boston: Allyn and Bacon, 1976), p. 124.

[10] La France and Mayo, p. 99.

[11] Restak, The Brain: The Last Frontier, pp. 205-06.